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10/734,014	12/11/2003	John G. Nunan	034166.053	2369

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EXAMINER	
MERKLING, MATTHEW J	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/734,014	NUNAN, JOHN G.	
	Examiner	Art Unit	
	MATTHEW J. MERKLING	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,9,12-17,19,20 and 23-28* is/are pending in the application.

4a) Of the above claim(s) *14-17,19,20,23 and 24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-6,9,12,13 and 25-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-6, 9 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohata (EP 0337809 A2) in view of Fujitani et al. (US 4,239,656).

Regarding claims 1, 9 and 28, Ohata discloses an exhaust treatment device (see abstract), comprising:

a substrate (such as a monolithic honeycomb, see abstract);

a 1-catalyst layer deposited on the substrate (see example 3 on page 5 where Ohata discloses producing a slurry containing a platinum catalyst and a rhodium catalyst and then depositing it on a honeycomb), the catalyst layer comprising a first catalyst metal (rhodium, see example 3 on page 5) and a second catalyst metal (platinum, see example 3

on page 5), as a combined loading on a support (gamma alumina, see example 3 on page 5) forming a homogenous mixed layer of said first catalyst metal and said second catalyst metal (see example 3 on page 5 where Ohata discloses milling a platinum catalyst and rhodium catalyst together (homogenizing) and then depositing the resulting slurry on a honeycomb); and

wherein the first catalyst metal and the second catalyst metal are different (as discussed above) and individually selected from the group consisting of platinum, palladium, rhodium, iridium, rhenium, ruthenium, and osmium (as discussed above),

wherein the catalyst layer further comprises an aluminum oxide (gamma alumina, as mentioned above) and an oxygen storage component (cerium oxide, see example 3) wherein the oxygen storage component is represented by the formula ($Ce_aZr_bLa_cY_dPr_eO_x$), wherein subscripts a, b, c, d, e, and x, represent atomic fractions, and wherein a + b + c + d + e = 1 (such as cerium oxide, CeO_2).

Ohata, however, fails to explicitly disclose the aluminum oxide and the storage component have average pore diameters of about 150A to about 1,000A.

Fujitani also discloses a catalyst for purifying exhaust gases and a carrier for the catalyst (see title).

Fujitani, similar to Ohata, teaches a catalyst support (γ-Al_2O_3, see Example 3 or Example 5 of Fujitani) with an oxygen storage component, also similar to Ohata (cerium, col. see Example 3 or Example 5 of Fujitani) and an average pore diameter of 400Å (0.04 μm, see Example 3 or Example 5 of Fujitani). Fujitani teaches this in order to provide a catalyst support with a high compressive strength (col. 8 lines 61-68). Fujitani also

teaches the pore diameter to the pore volume distribution in Fig. 2 of this catalyst, and further discloses that the pore diameters of the Fujitani invention are distributed over a very narrow range (col. 7 lines 4-8). It is clear to see from Fig. 2, that 50% - 80% of the total volume comes from the pore with diameters in the range of 180Å – 800Å (see curve 1 in Fig. 2). Fujitani teaches this catalyst and structure this as a successful way of removing NO_x, CO, and HC from exhaust gasses (see Table 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the catalyst support with the pore diameter and total pore volume to pore size distribution of Fujitani in the exhaust treatment device of Ohata in order to successfully remove NO_x, CO, and HC from exhaust gasses as well as providing a carrier which exhibits a strong compressive strength.

Furthermore, the catalyst disclosed by Ohata is substantially identical as the catalyst of the instant invention (palladium and rhodium in a single, homogenous layer, on a gamma alumina support with a oxygen storage material of the claimed composition). Ohata, however, does not explicitly disclose the non-alloying properties of the instant claim. However, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Regarding claim 2, Ohata further discloses the first catalyst metal is palladium and the second catalyst metal is rhodium (see Example 5).

Regarding claims 3 and 4, the catalyst disclosed by Ohata is substantially identical as the catalyst of the instant invention (palladium and rhodium in a single, homogenous layer, on a gamma alumina support with a oxygen storage material of the claimed composition). Ohata, however, does not explicitly disclose the non-alloying properties of the instant claim. However, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Regarding claims 5 and 6, Ohata further discloses a weight ratio of the palladium to the rhodium is about 3:1 to about 15:1 (see Table 1, Example 5 which discloses a ratio in the claimed range).

4. Claims 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohata (EP 0337809 A2) and Fujitani et al. (US 4,239,656) as applied to claim 1 above, and further in view of Anatoly et al. (US 6,387,338).

Regarding claims 12 and 26, modified Ohata discloses the use an oxygen storage component, but fails to teach the exact composition of the claimed oxygen storage component.

Anatoly also discloses oxygen storage materials.

Anatoly teaches an oxygen storage component with the composition of $Zr_{0.65}Ce_{0.25}La_{0.04}Y_{0.06}O_{1.95}$ (see Example 5) in order to enhance the phase stability under high temperature oxidizing and reducing conditions (see Brief Description of Fig. 14).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the composition of Anatoly in the oxygen storage component of Ohata in order to enhance the phase stability of the oxygen storage component under high temperature oxidizing and reducing conditions which are present in the disclosure of Ohata (see abstract which discloses the an exhaust gas purification apparatus, and see temperatures in Table 4).

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohata (EP 0337809 A2) and Fujitani et al. (US 4,239,656) as applied to claim 1 above, and further in view of Suzuki et al. (US 6,335,305).

Regarding claim 13, modified Ohata discloses a catalyst for purifying exhaust gasses which contains an oxygen storage component (as discussed above), but fails to teach the oxygen storage component has a stable cubic structure.

Suzuki also discloses a catalyst for purifying exhaust gas (see title).

Suzuki teaches an oxygen storage component with a cubic structure in order to maintain the structure even if a large amount of oxygen is discharged and since oxygen moves freely in the cubic structure, it shows excellent oxygen storage ability as compared to other structures (col. 6 lines 18-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the cubic structure of the oxygen storage component, as in Suzuki, in the oxygen storage component of modified Sung in order to maintain the structure even if a

large amount of oxygen is discharged and since oxygen moves freely in the cubic structure, it shows excellent oxygen storage ability as compared to other structures.

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohata (EP 0337809 A2) in view of Fujitani et al. (US 4,239,656) and Foster (US 5,857,140) and Anatoly et al. (US 6,387,338).

Regarding claims 25 and 27, Ohata discloses an exhaust treatment device (see abstract), comprising:

a substrate (such as a monolithic honeycomb, see abstract);

a catalyst layer deposited on the substrate, the catalyst layer being a homogenous mixed layer comprising palladium, rhodium, an aluminum oxide (see example 5 on page 5 where Ohata discloses producing a slurry containing a palladium catalyst and a rhodium catalyst on a gamma alumina and then depositing it on a honeycomb), and an oxygen storage component (such as cerium oxide, see example 5).

Ohata, however, fails to explicitly disclose the aluminum oxide and the storage component have average pore diameters of about 150A to about 1,000A wherein about 50% to about 80% of the pore volume, based on the total pore volume comprise pores having average pore diameters of about 180 angstroms to about 800 angstroms.

Fujitani also discloses a catalyst for purifying exhaust gases and a carrier for the catalyst (see title).

Fujitani, similar to Ohata, teaches a catalyst support (γ-Al_2O_3, see Example 3 or Example 5 of Fujitani) with an oxygen storage component, also similar to Ohata (cerium,

col. see Example 3 or Example 5 of Fujitani) and an average pore diameter of 400Å (0.04 μm, see Example 3 or Example 5 of Fujitani). Fujitani teaches this in order to provide a catalyst support with a high compressive strength (col. 8 lines 61-68). Fujitani also teaches the pore diameter to the pore volume distribution in Fig. 2 of this catalyst, and further discloses that the pore diameters of the Fujitani invention are distributed over a very narrow range (col. 7 lines 4-8). It is clear to see from Fig. 2, that 50% - 80% of the total volume comes from the pore with diameters in the range of 180Å – 800Å (see curve 1 in Fig. 2). Fujitani teaches this catalyst and structure this as a successful way of removing NO_x, CO, and HC from exhaust gasses (see Table 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the catalyst support with the pore diameter and total pore volume to pore size distribution of Fujitani in the exhaust treatment device of Ohata in order to successfully remove NO_x, CO, and HC from exhaust gasses as well as providing a carrier which exhibits a strong compressive strength.

Furthermore, the catalyst disclosed by Ohata is substantially identical as the catalyst of the instant invention (palladium and rhodium in a single, homogenous layer, on a gamma alumina support with a oxygen storage material of the claimed composition). Ohata, however, does not explicitly disclose the non-alloying properties of the instant claim. However, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Furthermore, Ohata teaches an oxygen storage component that can include cerium, yttrium, zirconium, and lanthanum, but does not explicitly disclose wherein the oxygen storage component is represented by the formula ($Ce_aZr_bLa_cY_dPr_eO_x$), wherein subscripts a, b, c, d, e, and x, represent atomic fractions, wherein a + b + c + d + e = 1; and a is from 0.01 to 0.6.

Anatoly also discloses oxygen storage materials.

Anatoly teaches an oxygen storage component with the composition of $Zr_{0.65}Ce_{0.25}La_{0.04}Y_{0.06}O_{1.95}$ (see Example 5) in order to enhance the phase stability under high temperature oxidizing and reducing conditions (see Brief Description of Fig. 14).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the composition of Anatoly in the oxygen storage component of Ohata in order to enhance the phase stability of the oxygen storage component under high temperature oxidizing and reducing conditions which are present in the disclosure of Ohata (see abstract which discloses the an exhaust gas purification apparatus, and see temperatures in Table 4).

Ohata teaches a catalyst for use in a exhaust treatment device, but fails to teach a retention material disposed around the substrate to form a subassembly and also a housing disposed around the subassembly.

Foster also discloses an exhaust gas treatment device (see Fig. 1)

Foster teaches a retention material (mat, (24)) in order to support the substrate (18) and prevent excessive heat loss (col. 1 line 64 – col. 2 line 5), and also teaches a housing

(12) around the substrate and the retention material to improve the durability of the retention material (intumescent material, col. 1 line 64 – col. 2 line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the retention material and housing of Foster, to the exhaust treatment device of modified Ohata in order to support the substrate and prevent excessive heat loss and to improve the durability of the retention material.

Response to Arguments

7. Applicant's arguments filed 4/8/2010 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. MERKLING whose telephone number is (571)272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. M./
Examiner, Art Unit 1795

/Basia Ridley/
Supervisory Patent Examiner, Art Unit 1795